2012 WASHINGTON STATE ENERGY CODE AND 2012 INTERNATIONAL RESIDENTIAL CODE
RESIDENTIAL ENERGY AND VENTILATION SUBMITTAL FORM

Applicant: _____ Application #: _____ Date: _____

Job Type: ☐ New ☐ Addition ☐ Remodel Conditioned Square Feet: _____

Occupancy: ☐ Single Family / Duplex ☐ Residential Care / Assisted Living / Adult Family Home

2012 WSEC TABLES R402.1.1 AND R402.1.3

	Glazing U-Factor		Door	Rafter/Joist Vaulted Ceilings	All Other Ceilings	Walls Above Grade	Walls Below Grade	Floors Over Unheated Space	Slab On Grade
	Vertical	Overhead	U-Factor						
	0.30	0.50	0.30	R-38 or R-30 ADV	R-49 or R-38 ADV	R-21 INT	R-10 CI Exterior OR R-15 CI Interior OR R-5 CI + R-13 Batt OR R-21 Batt w/TB @ Slab	R-30	R-10
Equivalent U-Factor	0.30	0.50	0.30	0.026	0.026	0.056	0.042	0.029	N/A
PROPOSED	_____	_____	_____	_____	_____	_____	_____	_____	_____

ADV = Uncompressed Insulation Over Top Plate INT = 2x6 at 16" o.c. w/ R-10 Headers CI = Continuous Insulation TB = Thermal Break

2012 WSEC TABLE R406.2

Dwelling units require additional points from the following options. **See options list on the back of this form.**

Small Dwelling Unit **0.5 pts required** (Floor Area < 1,500 s.f. with glazing < 300 s.f., or additions < 750 s.f.)
Medium Dwelling Unit **1.5 pts required** (All dwellings units that are not designated as Small or Large)
Large Dwelling Unit **2.5 pts required** (Floor Area > 5,000 s.f.) **TOTAL POINTS = _____**

☐ 1a (0.5 pts) ☐ 1c (2.0 pts) ☐ 2b (1.0 pts) ☐ 3a (0.5 pts) ☐ 3c (2.0 pts) ☐ 4 (1.0 pts) ☐ 5b (1.5 pts)
☐ 1b (1.0 pts) ☐ 2a (0.5 pts) ☐ 2c (1.5 pts) ☐ 3b (1.0 pts) ☐ 3d (1.0 pts) ☐ 5a (0.5 pts) ☐ 6 (0.5 pts)

VAPOR RETARDERS:

CRAWLSPACE		☐ 6-mil Black Poly	☐ 3½" Concrete Slab	☐ N/A
FLOORS	☐ 4-mil Poly	☐ Face Stapled Backed Batts	☐ Ext. T&G Plywood	☐ 6-mil Poly (Slab On Grade Floor)
WALLS	☐ 4-mil Poly	☐ Face Stapled Backed Batts	☐ Vapor Barrier Primer*	☐ N/A (≥ R-5 Rigid + R-21 Max)
CEILINGS	☐ 4-mil Poly	☐ Face Stapled Backed Batts	☐ Vapor Barrier Primer*	☐ N/A (≥ R-10 Rigid @ Roof Deck)

* Perm Rating ≤ 1.0

VENTILATION SYSTEM:

Each dwelling unit shall be equipped with **one** of the ventilation systems listed below. **Additional system information is available.**

☐ **Not Applicable (Additions less than 500 s.f.)**

☐ **Whole-House Exhaust Fan with fresh air port (net 4 sq. in. minimum opening) at each habitable room.**
A timer operates an exhaust fan which pulls outside air through air inlets located in each habitable room.

☐ **Integrated System with fresh air duct connected to return air duct of forced-air heating system.**
A timer operates the furnace blower and a motorized outside air inlet damper to distribute outside air through the heating ducts.

☐ **Supply Fan with fresh air duct connected to supply air duct or return air duct of forced-air heating system, or other ducts.**
A timer operates a supply fan connected to an outside air inlet to distribute outside air through the heating ducts or other ducts.

☐ **Heat Recovery System.**
A timer operates a heat recovery ventilator (HRV) to distribute outside air to habitable rooms through dedicated ducts.

☐ **Designed System per IMC with calculations and/or performance testing. Includes: ☐ Whole-house fan ☐ Fresh air ports**
Typically such systems must be designed, installed, tested, and balanced by a mechanical engineer or other HVAC professional.

Continuously operating ventilation systems shall provide the minimum flow rates specified in Table M1507.3.3(1).
Intermittently operating ventilation systems shall provide flow rates per Table M1507.3.3(1) as modified by Table M1507.3.3(2).

***** Please complete the System Ventilation Rate calculation on the back of this form. *****

AIR TESTING:

☐ **Duct Leakage Test** *Required when space-conditioning equipment is installed, altered, or replaced (including replacement of air handler, outdoor unit of air conditioner/heat pump, cooling or heating coil, or furnace heat exchanger). Some exceptions apply.*

☐ **Building Leakage Test** *Required for additions and new construction.*

***** Must be verified by on-site testing with specialized equipment. *****

TABLE M1507.3.3(1)
CONTINUOUS WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM AIRFLOW RATE REQUIREMENTS

DWELLING UNIT FLOOR AREA (square feet)	NUMBER OF BEDROOMS				
	0-1	2-3	4-5	6-7	>7
	Airflow in CFM				
<1,500	30	45	60	75	90
1,501 – 3,000	45	60	75	90	105
3,001 – 4,500	60	75	90	105	120
4,501 – 6,000	75	90	105	120	135
6,001 – 7,500	90	105	120	135	150
>7,500	105	120	135	150	165

TABLE M1507.3.3(2)
INTERMITTENT WHOLE-HOUSE MECHANICAL VENTILATION RATE FACTORS[a, b]

RUN-TIME PERCENTAGE IN EACH 4-HOUR SEGMENT	25%	33%	50%	66%	75%	100%
Factor[a]	4	3	2	1.5	1.3	1.0

a. For ventilation system run time values between those given, the factors are permitted to be determined by interpolation.
b. Extrapolation beyond the table is prohibited.

TABLE M1507.3.6.2
PRESCRIPTIVE SUPPLY FAN DUCT SIZING

Supply Fan Tested CFM at 0.40" W.G.		
Specified Volume from Table M1507.3.3(1)	Minimum Smooth Duct Diameter	Minimum Flexible Duct Diameter
50-90 CFM	4 inch	5 inch
90-150 CFM	5 inch	6 inch
150-250 CFM	6 inch	7 inch
250-400 CFM	7 inch	8 inch

***** CALCULATING OUTSIDE AIR REQUIREMENT FOR INTERMITTENT WHOLE-HOUSE VENTILATION SYSTEMS *****

Table M1507.3.3(1) is based on *continuous* operation. The ventilation rate must be increased by the factors from Table M1507.3.3(2) if the system will operate less than 24 hours per day, as follows:

Ventilation System Airflow Rate Requirement from **Table M1507.3.3(1)** _____ cfm

Ventilation Rate Factor from **Table M1507.3.3(2)** x _____

System Ventilation Rate (Fan Size and/or Balancing Requirement) **= _____ cfm**

2012 WSEC TABLE R406.2

OPTION	DESCRIPTION	PTS	OPTION	DESCRIPTION	PTS
1a	EFFICIENT BUILDING ENVELOPE: Prescriptive compliance is based on Table R402.1.1 with the following modifications: Fenestration U = 0.28, Floor R-38, Slab on grade R-10 perimeter and under entire slab, Below grade slab R-10 perimeter and under entire slab **OR** Compliance based on Section R402.1.4: Reduce the Total UA by 5%.	0.5	3b	HIGH EFFICIENCY HVAC EQUIPMENT: Air-source heat pump with minimum HSPF of 8.5. The building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.	1.0
1b	EFFICIENT BUILDING ENVELOPE: Prescriptive compliance is based on Table R402.1.1 with the following modifications: Fenestration U = 0.25, Wall R-21 plus R-4, Floor R-38, Basement wall R-21 int plus R-5 ci, Slab on grade R-10 perimeter and under entire slab, Below grade slab R-10 perimeter and under entire slab **OR** Compliance based on Section R402.1.4: Reduce the Total UA by 15%.	1.0	3c	HIGH EFFICIENCY HVAC EQUIPMENT: Closed-loop ground source heat pump with a minimum COP of 3.3 **OR** Open loop water source heat pump with a maximum pumping hydraulic head of 150 feet and minimum COP of 3.6. The building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.	2.0
1c	EFFICIENT BUILDING ENVELOPE: Prescriptive compliance is based on Table R402.1.1 with the following modifications: Fenestration U = 0.22, Ceiling and single-rafter or joist-vaulted R-49 advanced, Wood frame wall R-21 int plus R-12 ci, Floor R-38, Basement wall R-21 int plus R-12 ci, Slab on grade R-10 perimeter and under entire slab, Below grade slab R-10 perimeter and under entire slab **OR** Compliance based on Section R402.1.4: Reduce the Total UA by 30%.	2.0	3d	HIGH EFFICIENCY HVAC EQUIPMENT: DUCTLESS SPLIT SYSTEM HEAT PUMPS, ZONAL CONTROL: In homes where the primary space heating system is zonal electric heating, a ductless heat pump system shall be installed and provide heating to at least one zone of the housing unit. The building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.	1.0
2a	AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION: Compliance based on R402.4.1.2: Reduce the tested air leakage to 4.0 air changes per hour maximum **AND** All whole house ventilation requirements as determined by IRC Section M1507.3 shall be met with a high efficiency fan (maximum 0.35 watts/cfm), not interlocked with the furnace fan. Ventilation systems using a furnace including an ECM motor are allowed, provided that they are controlled to operate at low speed in ventilation only mode. The building permit drawings shall specify the option being selected and shall specify the maximum tested building air leakage and shall show the high efficiency fan.	0.5	4	HIGH EFFICIENCY HVAC DISTRIBUTION SYSTEM: All heating and cooling system components (including ductwork) installed inside the conditioned space. All combustion equipment shall be direct vent or sealed combustion. Locating system components in conditioned crawl spaces is not permitted under this option. Electric resistance heat is not permitted under this option. Direct combustion heating equipment with AFUE less than 80% is not permitted under this option. The building permit drawings shall specify the option being selected and shall specify the heating equipment type and shall show the location of the heating and cooling equipment and all the ductwork.	1.0
2b	AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION: Compliance based on Section R402.4.1.2: Reduce the tested air leakage to 2.0 air changes per hour maximum **AND** All whole house ventilation requirements as determined by IRC Section M1507.3 shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.70. The building permit drawings shall specify the option being selected and shall specify the maximum tested building air leakage and shall show the heat recovery ventilation system.	1.0	5a	EFFICIENT WATER HEATING: Water heating system shall include one of the following: Gas, propane or oil water heater with a minimum EF of 0.62 **OR** Electric water heater with a minimum EF of 0.93 **AND for both cases** All showerhead and kitchen sink faucets installed in the house shall be rated at 1.75 GPM or less. All other lavatory faucets shall be rated at 1.0 GPM or less. The building permit drawings shall specify the option being selected and shall specify the water heater equipment type and the minimum equipment efficiency and shall specify the maximum flow rates for all showerheads, kitchen sink faucets, and other lavatory faucets.	0.5
2c	AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION: Compliance based on Section R402.4.1.2: Reduce the tested air leakage to 1.5 air changes per hour maximum **AND** All whole house ventilation requirements as determined by Section M1507.3 of the *International Residential Code* shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.85. The building permit drawings shall specify the option being selected and shall specify the maximum tested building air leakage and shall show the heat recovery ventilation system.	1.5	5b	EFFICIENT WATER HEATING: Water heating system shall include one of the following: Gas, propane or oil water heater with a minimum EF of 0.82 **OR** Solar water heating supplementing a minimum standard water heater. Solar water heating will provide a rated minimum savings of 85 therms or 2000 kWh based on the Solar Rating and Certification Corporation (SRCC) Annual Performance of OG-300 Certified Solar Water Heating Systems **OR** Electric heat pump water heater with a minimum EF of 2.0 and meeting the standards of NEEA's Northern Climate Specifications for Heat Pump Water Heaters **OR** Water heater heated by ground source heat pump meeting the requirements of Option 3c. The building permit drawings shall specify the option being selected and shall specify the water heater equipment type and the minimum equipment efficiency and, for solar water heating systems, the calculation of the minimum energy savings.	1.5
3a	HIGH EFFICIENCY HVAC EQUIPMENT: Gas, propane or oil-fired furnace with minimum AFUE of 95%. The building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.	0.5	6	RENEWABLE ELECTRIC ENERGY: For each 1200 kWh of electrical generation provided annually by on-site wind or solar equipment a 0.5 credit shall be allowed, up to 3 credits. Generation shall be calculated as follows: For solar electric systems, the design shall be demonstrated to meet this requirement using the National Renewable Energy Laboratory calculator PVWATTs. Documentation noting solar access shall be included on the plans. For wind generation projects designs shall document annual power generation based on the following factors: The wind turbine power curve; average annual wind speed at the site; frequency distribution of the wind speed at the site and height of the tower. The building permit drawings shall specify the option being selected and shall show the photovoltaic or wind turbine equipment type, provide documentation of solar and wind access, and include a calculation of the minimum annual energy power production.	0.5